Tips for testing the quality of data matrix codes

Increase the print quality with a few simple visual checks.

Additional and Special MAIL Services, dept. 31A2

General information

A data matrix code is comprised of black and white modules (boxes). A black module corresponds to the binary value 1, and a white one to the value 0. Therefore the print quality is a decisive factor for a scanner to be able to assess without a doubt which value a module has. Insufficient print quality may mean that the data matrix code cannot be read.

Since hand scanners can have different read results, they are only suitable for checking the quality of the data matrix codes to a certain extent.

In the following, you will find some information which will enable you to easily evaluate the print quality of a data matrix code yourself as part of a visual check, using a standard linen tester where applicable. There is relevant test equipment available in stores for further checks.

The **ISO/IEC 15415** standard is used as a basis for checking the code quality of the data matrix code.
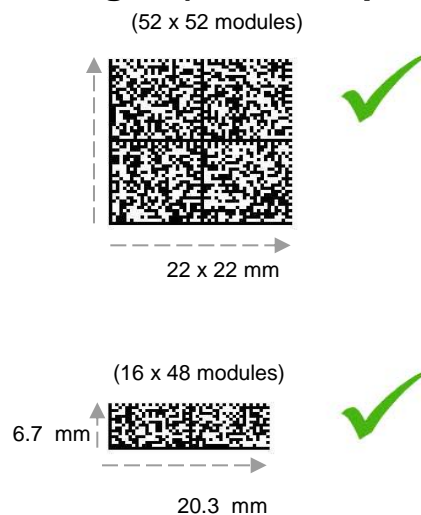
The quality of the printed data matrix code should as a matter of principle be "Grade A," following the quality parameters specified in this standard. In the case of deviations from this, Deutsche Post AG will need to perform a practice-related test to check whether the minimum quality necessary is being attained.

Physical size

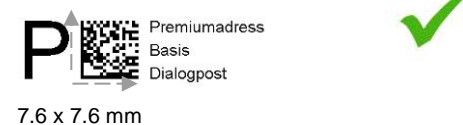Is the data matrix code the correct **physical size**?

Pressesendungen (Standard periodicals)

(52 x 52 modules)

22 x 22 mm

(16 x 48 modules)

6.7 mm

20.3 mm

Letters, Dialogpost items, postcards:

(26 x 26 modules)

11x 11 mm

(22 x 22 modules)

9.3 x 9.3 mm

Premiumadress Label

Premiumadress
Basis
Dialogpost

7.6 x 7.6 mm

Tips and notes

› If a data matrix code is printed smaller, then it can
  normally no longer be read.

› Use a linen tester to check.

Contrast

Is the **contrast** adequate?

Good contrast

Modules are too light

Background is too dark

Tips and notes

Transparent labels or envelopes affect the read result.

Modulation

Modulation: Are all modules equally dark?

Good modulation ✔

Bad modulation
(differences in brightness between the modules) ✗

Tips and notes

> Please contact the manufacturer of your printer if you have any questions.

> Use a linen tester to check.

Fixed code patterns

Are the **fixed code patterns** (rhythmic pattern, quiet zone, search pattern) damaged?

Good and complete fixed code patterns

Taktmuster

Suchmuster

Search pattern damaged
(e.g., printer head or drum unit is dirty

Tips and notes

Use a linen tester to check.

Quiet zone

Has the **quiet zone** around the data matrix code been respected?

Quiet zone fully complied with

Arndt Sender & Co., Sender Street. 1a, 12345 Sender town

Sonne, Sand und Meer...

Pierre Premium
Ph.D. in economics and social sciences
Premium Street 1
12345 Premium town

Quiet zone (approx. 3 mm)

Quiet zone not respected

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12345 Premium town

Axial non-uniformity

Axial non-uniformity: Are there deviations in the ratio between the width and height of the code and thus between the individual modules (black and white boxes)?

Good form/linearity   **Vertical non-linearity**   **Horizontal non-linearity**
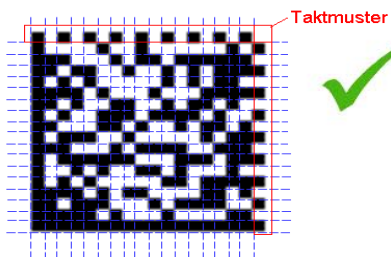

Tips and notes

Please contact the manufacturer of your printer if you have any questions.
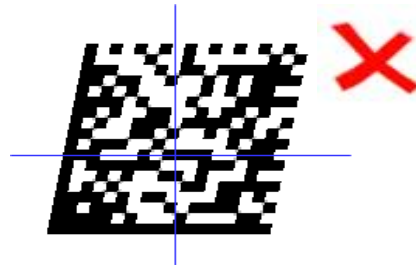
Grid non-linearity

Grid non-linearity: Are there deviations between the grid derived from the rhythmic pattern and the ideal grid?

Good grid/linearity

Taktmuster

✓

Distorted grid

✗

Moved grid
(misalignment of the printer heads)

✗

Print growth

Print growth: Are all modules the same size?

Without print growth ✔

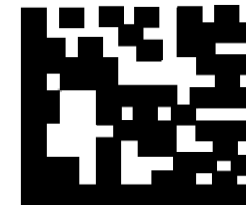**Negative print growth** ✘
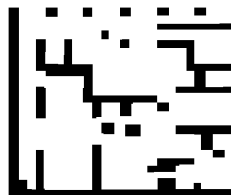
Positive print growth ✘

Tips and notes

> Print growth can be positive or negative. According to the printing technique and background, the printing can be too dark or too light.
> Please contact the manufacturer of your printer if you have any questions.

> Use a linen tester to check.

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